

Chapter 47 Statistical Physics (Examples) (SM10)

Example 1: Calculate the density of state function of an ideal gas.

Example 2: Apply Maxwell-Boltzmann statistics to calculate the internal energy of an ideal gas.

Example 3: Calculate the density of state function of the photons in a cavity.

Example 4: Apply Bose-Einstein statistics to photons in a cavity to derive Planck's blackbody radiation curve.

Example 5: Calculate the density of state function of conduction electrons in a rectangular conductor.

Example 6: Apply free electron theory and Fermi-Dirac statistics to conduction electrons in a metal to calculate the Fermi energy of copper.

Example 7: Apply free electron theory and Fermi-Dirac statistics to conduction electrons in a metal to calculate the average energy of the conduction electrons at absolute zero.

Example 8: Apply free electron theory and Fermi-Dirac statistics to conduction electrons in a metal to calculate the probability of a state being occupied if $e = e_f$ and $e = e_f + kT$.